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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/772,822

## Applicant(s)

RAJAN ET AL

## Examiner

Arpan P. Savla

## Art Unit

2185

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15, 19, 20 and 23-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15, 19, 20 and 23-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-06)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### **Continued Examination Under 37 CFR 1.114**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 4, 2010 has been entered.

### **Response to Amendment**

This Office action is in response to Applicant's communication filed August 4, 2010 in response to the Office action dated May 4, 2010. Claims 1-15, 19, 20, and 23-42 are pending in this application.

## **REJECTIONS BASED ON PRIOR ART**

### **Claim Rejections - 35 USC § 103**

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1, 3, 6-10, 13-15, 19, 20, 23, 25, 28-31, 33, and 36-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Federwisch et al. (U.S. Patent

**Application Publication 2003/0182313) (hereinafter “Federwisch”) in view of  
Edwards (U.S. Patent Application Publication 2003/0182389).**

The applied references have a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, they constitute prior art under 35 U.S.C. 102(e). However, the references were published before the earliest priority date of the instant application, thus, they also constitute prior art under 35 U.S.C. 102(a).

3. **As per claims 1 and 20.** Federwisch discloses a method for operating a data storage system, comprising:

creating a writable virtual disk (vdisk) at a selected time, the writable vdisk referencing changes in data stored in the data storage system after the writable vdisk was created (paragraphs 0064 and 00128); *It should be noted that the computer readable medium of claim 20 executes the same functions as the method of claim 1. Therefore, any reference(s) that teach claim 1 also teach corresponding claim 20. It should also be noted that the “source snapshot” is equivalent to a “writable vdisk.”*

maintaining a backing store, the backing store referencing the data stored in the data storage system which has not been changed since the writable vdisk was created (paragraphs 0064 and 00128); *It should be noted that in Federwisch’s “lazy write” replication changes are accumulated at the source before they are transmitted to the destination. Thus, before the changes are transmitted to the destination, the destination reflects a state in which data has not been changed. Therefore, it follows that the “destination snapshot” is equivalent to a “backing store.”*

loading blocks of the writable vdisk into a memory, the loaded blocks including a writable vdisk indirect block having a plurality of fields, each field storing a valid pointer to a data block or an invalid pointer representing a particular hole of the plurality of holes, where each hole instructs the data storage system to examine a corresponding virtual block number pointer in the backing store (paragraphs 0067-0068 and 0131-0132; Fig. 17); *It should be noted that the inode file is already loaded on some sort of memory. It should also be noted that a "zero entry" is equivalent to an "invalid pointer".*

loading blocks of the backing store into memory, the loaded blocks including a backing store indirect block having a plurality of fields, each backing store indirect field corresponding to a field of the writable vdisk indirect block, one or more backing store indirect block fields having a pointer to a data block (paragraphs 0067-0068 and 0131-0132; Fig. 17); *See the citation note for the limitation directly above.*

and replacing each field having a hole in the writable vdisk indirect block with a new pointer to the data block referenced by the corresponding backing store indirect block field to update the writable vdisk to reference both the data which is unchanged since the writable vdisk was created and the data which has been changed since the writable vdisk was created (paragraphs 0131-0132; Fig. 17, element 1740). *It should be noted that "zero entries" are replaced with new entries that map to the proper inode.*

Federwisch does not disclose searching each field of the writable vdisk indirect block for a hole.

Edwards discloses searching each field of the writable vdisk indirect block for a hole (paragraph 0048; Fig. 8, element 805).

Federwisch and Edwards are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to apply Edwards' on-line check to Federwisch's snapshots. The motivation for doing so would have been to repair predetermined problems with file system coherency and consistency to ensure that the file system is stable and usable (Federwisch, paragraph 0013).

4. **As per claim 3**, the combination of Federwisch/Edwards discloses choosing a new pointer for a newly allocated data block containing the unaltered data content (Federwisch, paragraph 0131; Fig. 17);

setting bits in block allocation structures for the newly allocated data block (Federwisch, paragraph 0131; Fig. 17); *It should be noted that the "inode maps" are equivalent to the "block allocation structures."*

placing the new pointer to the newly allocated data block into the field of the writable vdisk indirect block to replace the hole (Federwisch, paragraph 0131; Fig. 17).

5. **As per claim 6**, the combination of Federwisch/Edwards discloses the pointers contained in the writable vdisk indirect block fields and the backing store indirect block fields comprise logical block numbers (VBNs) (Federwisch, paragraph 0067).

6. **As per claim 7**, the combination of Federwisch/Edwards discloses the invalid pointers contained in the writable vdisk indirect block fields comprise a zero logical volume block number (VBN) (Federwisch, paragraph 0131).

7. **As per claim 8**, the combination of Federwisch/Edwards discloses the plurality of fields in the writable vdisk indirect block are a writable vdisk level 1 buffer and the plurality of fields in the backing store indirect block are a backing store level 1 buffer (Federwisch, paragraphs 0067-0068). *It should be noted that the “inodes” function as “level 1 buffers.”*

8. **As per claim 9**, Federwisch discloses an apparatus for operating a computer data base, comprising:

a writable virtual disk (vdisk) created at a selected time, the writable vdisk referencing changes in data stored in a data storage system after the writable vdisk was created (paragraphs 0064 and 0128);

a backing store, the backing store referencing data stored in the data storage system which has not been changed since the writable vdisk was created (paragraphs 0064 and 0128);

a backdoor message handler adapted to load blocks of the writable vdisk and backing store into a memory of the storage system (paragraphs 0067-0068);

a writable vdisk indirect block in the memory having a plurality of fields, each field storing a valid pointer to a data block or an invalid pointer representing a particular hole of a plurality of holes, where each hole instructs the data storage system to examine a corresponding virtual block number pointer in the backing store (paragraphs 0067-0068 and 0131-0132; Fig. 17);

a backing store indirect block in the memory having a plurality of fields, each backing store indirect block field corresponding to a field of the writable vdisk indirect

block, each backing store indirect block field having a pointer to a data block (paragraphs 0067-0068 and 0131-0132; Fig. 17);

and a write allocator for replacing each field representing a hole in the writable vdisk indirect block with a new pointer to the data referenced by the corresponding backing store indirect block field to update the writable vdisk to reference both the data which is unchanged since the writable vdisk was created and the data which has been changed since the writable vdisk was created (paragraphs 0131-0132; Fig. 17, element 1740). *See the citation notes for the similar limitations in claims 1 and 20 above.*

Federwisch does not disclose a special loading function for searching each field of the writable vdisk indirect block for one or more fields representing a hole.

Edwards discloses a special loading function for searching each field of the writable vdisk indirect block for one or more fields representing a hole (paragraph 0048; Fig. 8, element 805).

Federwisch and Edwards are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to apply Edwards' on-line check to Federwisch's snapshots. The motivation for doing so would have been to repair predetermined problems with file system coherency and consistency to ensure that the file system is stable and usable (Federwisch, paragraph 0013).

9. **As per claim 10**, the combination of Federwisch/Edwards discloses a new pointer for a newly allocated data block containing an unaltered data content, set bits in



block allocation structures for the newly allocated data block, and place the new pointer to the newly allocated data block into the field of the writable vdisk indirect block to replace the hole (Federwisch, paragraph 0131; Fig. 17). *See the citation note for claim 3 above.*

10. **As per claim 13**, the combination of Federwisch/Edwards discloses the pointers contained in the writable vdisk indirect block fields and the backing store indirect block fields comprise logical block numbers (VBNs) (Federwisch, paragraph 0067).

11. **As per claim 14**, the combination of Federwisch/Edwards discloses the invalid pointers contained in the writable vdisk indirect block fields comprise a zero logical volume block number (VBN) (Federwisch, paragraph 0131).

12. **As per claim 15**, the combination of Federwisch/Edwards discloses the plurality of fields in the writable vdisk indirect block are a writable vdisk level 1 buffer and the plurality of fields in the backing store indirect block are a backing store level 1 buffer (Federwisch, paragraphs 0067-0068). *See the citation note for claim 8 above.*

13. **As per claim 19**, Federwisch discloses a data storage apparatus, comprising:  
means for creating a writable virtual disk (vdisk) at a selected time, the writable vdisk referencing changes in data stored in the data storage system after the writable vdisk was created (paragraphs 0064 and 0128);

means for maintaining a backing store, the backing store referencing the data stored in the data storage system which has not been changed since the writable vdisk was created (paragraphs 0064 and 0128);

means for loading blocks of the writable vdisk into a memory, the loaded blocks including a writable vdisk indirect block having a plurality of fields, each field storing a valid pointer to a data block or an invalid pointer representing a particular hole of the plurality of holes, where each hole instructs the data storage system to examine a corresponding virtual block number pointer in the backing store (paragraphs 0067-0068 and 0131-0132; Fig. 17);

means for loading blocks of the backing store from a disk into memory, the loaded blocks including a backing store indirect block having a plurality of fields, each backing store indirect field corresponding to a field of the writable vdisk indirect block, one or more backing store indirect block fields having a pointer to a data block (paragraphs 0067-0068 and 0131-0132; Fig. 17);

and means for replacing each field having a hole in the writable vdisk indirect block with a new pointer to the data block referenced by the corresponding backing store indirect block field to update the writable vdisk to reference both the data which is unchanged since the writable vdisk was created and the data which has been changed since the writable vdisk was created (paragraphs 0131-0132; Fig. 17, element 1740).

*See the citation notes for the similar limitations in claims 1 and 20 above.*

Federwisch does not disclose means for searching each field of the writable vdisk indirect block for a hole.

Edwards discloses means for searching each field of the writable vdisk indirect block for a hole (paragraph 0048; Fig. 8, element 805).

Federwisch and Edwards are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to apply Edwards' on-line check to Federwisch's snapshots. The motivation for doing so would have been to repair predetermined problems with file system coherency and consistency to ensure that the file system is stable and usable (Federwisch, paragraph 0013).

14. **As per claims 23 and 39**, Federwisch discloses a method for operating a data storage system, comprising:

creating a writable virtual disk (vdisk) at a selected time, the writable vdisk referencing changes in data stored in the data storage system after the writable vdisk was created, the writable vdisk having a plurality of holes where each hole instructs the storage system to examine a corresponding virtual block number pointer in a backing store (paragraphs 0064, 0128, and 0131-0132; Fig. 17); *It should be noted that the computer readable medium of claim 39 executes the exact same functions as the method of claim 23. Therefore, any reference(s) that teach claim 23 also teach corresponding claim 39.*

maintaining the backing store, the backing store referencing the data stored in the data storage system which has not been changed since the writable vdisk was created (paragraphs 0064 and 0128);

and referencing each hole in the writable vdisk to point to the data block referenced by the corresponding backing store indirect block to update the writable

vdisk to reference both the data which is unchanged since the writable vdisk was created and the data which has been changed since the writable vdisk was created (paragraphs 0131-0132; Fig. 17, element 1740). *See the citation notes for the similar limitations in claims 1 and 20 above.*

Federwisch does not disclose searching each field of the writable vdisk indirect block for a hole.

Edwards discloses searching each field of the writable vdisk indirect block for a hole (paragraph 0048; Fig. 8, element 805).

Federwisch and Edwards are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to apply Edwards' on-line check to Federwisch's snapshots. The motivation for doing so would have been to repair predetermined problems with file system coherency and consistency to ensure that the file system is stable and usable (Federwisch, paragraph 0013).

15. **As per claim 25**, the combination of Federwisch/Edwards discloses choosing a new pointer for a newly allocated data block containing the unaltered data content (Federwisch, paragraph 0131; Fig. 17);

setting bits in block allocation structures for the newly allocated data block (Federwisch, paragraph 0131; Fig. 17); *See the citation note for claim 3 above.*

placing the new pointer to the newly allocated data block into the field of the writable vdisk indirect block to replace the hole (Federwisch, paragraph 0131; Fig. 17).

16. **As per claim 28**, the combination of Federwisch/Edwards discloses including logical volume block numbers (VBNs) in the pointers contained in the writable vdisk indirect block fields and the backing store indirect block fields (Federwisch, paragraph 0067).
17. **As per claim 29**, the combination of Federwisch/Edwards discloses using a zero logical volume block number (VBN) as the invalid pointers contained in the writable vdisk indirect block fields (Federwisch, paragraph 0131).
18. **As per claim 30**, the combination of Federwisch/Edwards discloses using a writable vdisk level 1 buffer for the plurality of fields in the writable vdisk indirect block and using a backing store level 1 buffer for the plurality of fields in the backing store indirect block (Federwisch, paragraphs 0067-0068). *See the citation note for claim 8 above.*
19. **As per claim 31**, Federwisch discloses a data storage system, comprising:
- a writable virtual disk (vdisk) created at a selected time, the writable vdisk referencing changes in data stored in the data storage system after the writable vdisk was created, the writable vdisk having a plurality of holes, each hole instructing the storage system to examine a corresponding virtual block number pointer in a backing store (paragraphs 0064, 0128, and 0131-0132; Fig. 17);
  - a backing store, the backing store referencing the data stored in the data storage system which has not been changed since the writable vdisk was created (paragraphs 0064 and 0128);

and a processor to reference each hole in the writable vdisk to point to the data block referenced by the corresponding backing store indirect block to update the writable vdisk to reference both the data which is unchanged since the writable vdisk was created and the data which has been changed since the writable vdisk was created (paragraphs 0131-0132; Fig. 17, element 1740). *See the citation notes for the similar limitations in claims 1 and 20 above.*

Federwisch does not disclose a processor to search each field of the writable vdisk for a hole.

Edwards discloses a processor to search each field of the writable vdisk for a hole (paragraph 0048; Fig. 8, element 805).

Federwisch and Edwards are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to apply Edwards' on-line check to Federwisch's snapshots. The motivation for doing so would have been to repair predetermined problems with file system coherency and consistency to ensure that the file system is stable and usable (Federwisch, paragraph 0013).

20. **As per claim 33**, the combination of Federwisch/Edwards discloses a new pointer chosen for a newly allocated data block containing an unaltered data content (Federwisch, paragraph 0131; Fig. 17);

bits are set in a block allocation structures for the newly allocated data block (Federwisch, paragraph 0131; Fig. 17); *See the citation note for claim 3 above.*

and a new pointer to the newly allocated data block placed into a field of the writable vdisk indirect block to replace the hole (Federwisch, paragraph 0131; Fig. 17).

21. **As per claim 36**, the combination of Federwisch/Edwards discloses logical volume block numbers (VBNs) included in the pointers contained in the writable vdisk indirect block fields and the backing store indirect block fields (Federwisch, paragraph 0067).

22. **As per claim 37**, the combination of Federwisch/Edwards discloses a zero logical volume block number (VBN) used as the invalid pointers contained in the writable vdisk indirect block fields (Federwisch, paragraph 0131).

23. **As per claim 38**, the combination of Federwisch/Edwards discloses a writable vdisk level 1 buffer used for the plurality of fields in the writable vdisk indirect block and a backing store level 1 buffer used for the plurality of fields in the backing store indirect block (Federwisch, paragraphs 0067-0068). *See the citation note for claim 8 above.*

24. **As per claims 40 and 42**, Federwisch discloses a method for operating a data storage system, comprising:

creating a writable virtual disk (vdisk) at a selected time, the writable vdisk referencing changes in data stored in the data storage system after the writable vdisk was created, the writable vdisk having a plurality of holes where each hole instructs the storage system to examine a corresponding virtual block number pointer in a backing store (paragraphs 0064, 0128, and 0131-0132; Fig. 17); *It should be noted that the computer readable medium of claim 42 executes the exact same functions as the*

*method of claim 40. Therefore, any reference(s) that teach claim 40 also teach corresponding claim 42.*

maintaining the backing store, the backing store referencing the data stored in the data storage system which has not been changed since the writable vdisk was created (paragraphs 0064 and 0128);

and referencing each hole in the writable vdisk to point to the data block referenced by the corresponding backing store indirect block to update the writable vdisk to reference both the data which is unchanged since the writable vdisk was created and the data which has been changed since the writable vdisk was created (paragraphs 0131-0132; Fig. 17, element 1740). *See the citation notes for the similar limitations in claims 1 and 20 above.*

Federwisch does not disclose searching, by a background task process, each field of the writable vdisk indirect block for a hole.

Edwards discloses searching, by a background task process, each field of the writable vdisk indirect block for a hole (paragraph 0048; Fig. 8, element 805; paragraph 0060).

Federwisch and Edwards are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to apply Edwards' on-line check to Federwisch's snapshots. The motivation for doing so would have been to repair predetermined problems with file



system coherency and consistency to ensure that the file system is stable and usable (Federwisch, paragraph 0013).

25. **As per claim 41**, Federwisch discloses a data storage system, comprising:

a writable virtual disk (vdisk) created at a selected time, the writable vdisk referencing changes in data stored in the data storage system after the writable vdisk was created, the writable vdisk having a plurality of holes, each hole instructing the storage system to examine a corresponding virtual block number pointer in a backing store (paragraphs 0064, 0128, and 0131-0132; Fig. 17);

a backing store, the backing store referencing the data stored in the data storage system which has not been changed since the writable vdisk was created (paragraphs 0064 and 0128);

and a processor to reference each hole in the writable vdisk to point to the data block referenced by the corresponding backing store indirect block to update the writable vdisk to reference both the data which is unchanged since the writable vdisk was created and the data which has been changed since the writable vdisk was created (paragraphs 0131-0132; Fig. 17, element 1740). *See the citation notes for the similar limitations in claims 1 and 220 above.*

Federwisch does not disclose a background task processor to search each field of the writable vdisk for a hole.

Edwards discloses a background task processor to search each field of the writable vdisk for a hole (paragraph 0048; Fig. 8, element 805; paragraph 0060).

Federwisch and Edwards are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to apply Edwards' on-line check to Federwisch's snapshots. The motivation for doing so would have been to repair predetermined problems with file system coherency and consistency to ensure that the file system is stable and usable (Federwisch, paragraph 0013).

**26. Claims 2, 4, 5, 11, 12, 24, 26, 27, 32, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Federwisch in view of Edwards as applied to claims 1, 3, 9, 10, 23, 25, 31, and 33 above, and further in view of Haskin et al. (U.S. Patent Application Publication 2003/0158863) (hereinafter "Haskin").**

**As per claim 2,** the combination of Federwisch/Edwards discloses all the limitations of claim except dirtying the data block pointed to by the backing store indirect block to enable write allocation of the dirty data block without altering a data content of the data block.

Haskin discloses dirtying the data block pointed to by the backing store indirect block to enable write allocation of the dirty data block without altering a data content of the data block (Haskin, paragraph 0079). *It should be noted that replacing the address of the allocated block is in effect "dirtying" the block without altering the content.*

The combination of Federwisch/Edwards and Haskin are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to apply Haskin's ditto address feature to Federwisch/Edwards' data storage system. The motivation for doing so would have been to more efficiently utilize system kernel memory within data processing equipment to support time sensitive processing tasks such as external data communications processing (Haskin, paragraph 0011).

27. **As per claim 4**, the combination of Federwisch/Edwards/Haskin discloses freeing the dirty data block (Haskin, paragraph 0177); *It should be noted that "deleting" is equivalent to "freeing."*

writing the newly allocated data block to disk (Haskin, paragraph 0177). *It should be noted that "flushing disk access buffers to disk" is equivalent to "writing to disk."*

28. **As per claim 5**, the combination of Federwisch/Edwards/Haskin discloses releasing an association of the writable vdisk to the backing store to thereby separate the writable disk data blocks from the backing store data blocks (Haskin, paragraph 0112). *It should be noted that by "deleting" the snapshot it follows that all associations with the original file system are "released."*

29. **As per claim 11**, the combination of Federwisch/Edwards/Haskin discloses the write allocator is further adapted to:

free the dirty data block and write the newly allocated data block to disk (Haskin, paragraph 0177). *See the citation notes for claim 4 above.*

30. **As per claim 12**, the combination of Federwisch/Edwards/Haskin discloses the backdoor handler loads blocks of writable vdisk and the blocks of the backing store

during periods of reduced processing activity (Haskin, paragraph 0053). *It should be noted that the blocks are loaded during periods other than when the blocks are being updated, thus when compared to periods of block updating, the loading periods have reduced processing activity.*

31. **As per claim 24**, the combination of Federwisch/Edwards/Haskin discloses dirtying the data block pointed to by the backing store indirect block to enable write allocation of the dirty data block without altering a data content of the data block (Haskin, paragraph 0079). *See the citation note for claim 2 above.*

32. **As per claim 26**, the combination of Federwisch/Edwards/Haskin discloses freeing the dirty data block (Haskin, paragraph 0177); *See the citation note for claim 4 above.*

writing the newly allocated data block to disk (Haskin, paragraph 0177). *See the citation note for claim 4 above.*

33. **As per claim 27**, the combination of Federwisch/Edwards/Haskin discloses releasing an association of the writable vdisk to the backing store to thereby separate the writable disk data blocks from the backing store data blocks (Haskin, paragraph 0112). *See the citation note for claim 5 above.*

34. **As per claim 32**, the combination of Federwisch/Edwards/Haskin discloses the data block pointed to by the backing store are dirtied to enable write allocation of the dirty data block without altering a data content of the data block (Haskin, paragraph 0079). *See the citation note for claim 2 above.*

35. **As per claim 34**, the combination of Federwisch/Edwards/Haskin discloses

the dirty block is freed; and the newly allocated data block is written to disk (Haskin, paragraph 0177). *See the citation notes for claim 4 above.*

36. **As per claim 35**, the combination of Federwisch/Edwards/Haskin discloses an association of the writable vdisk to the backing store is released to thereby separate the writable vdisk data blocks from the backing store data blocks (Haskin, paragraph 0112). *See the citation note for claim 5 above.*

### **Response to Arguments**

37. Applicant's arguments filed August 4, 2010 with respect to **claims 1-15, 19, 20, and 23-42** have been fully considered but they are not persuasive.

38. The supplemental declarations filed on August 4, 2010 under 37 CFR 1.131 have been considered but are ineffective to overcome the Federwisch and Edwards references. The evidence submitted is insufficient to establish diligence from a date prior to the date of reduction to practice of the Federwisch and Edwards references to either a constructive reduction to practice or an actual reduction to practice.

The Examiner refers Applicant to the portion of MPEP §2138.06 which states:

**"THE ENTIRE PERIOD DURING WHICH DILIGENCE IS REQUIRED  
MUST BE ACCOUNTED FOR BY EITHER AFFIRMATIVE ACTS OR  
ACCEPTABLE EXCUSES**

An applicant must account for the entire period during which diligence is required. *Gould v. Schawlow*, 363 F.2d 908, 919, 150 USPQ 634, 643 (CCPA 1966) (Merely stating that there were no weeks or months that the invention was not worked on is not enough.); *In re Harry*, 333 F.2d 920, 923, 142 USPQ 164, 166 (CCPA 1964) (statement that the subject matter "was diligently reduced to practice" is not a showing but a mere pleading). A 2-day period lacking activity has been held to be fatal. *In re Mulder*, 716

F.2d 1542, 1545, 219 USPQ 189, 193 (Fed. Cir. 1983) ( 37 CFR 1.131 issue); *Fitzgerald v. Arbib*, 268 F.2d 763, 766, 122 USPQ 530, 532 (CCPA 1959) (Less than 1 month of inactivity during critical period. Efforts to exploit an invention commercially do not constitute diligence in reducing it to practice. An actual reduction to practice in the case of a design for a three-dimensional article requires that it should be embodied in some structure other than a mere drawing.); *Kendall v. Searles*, 173 F.2d 986, 993, 81 USPQ 363, 369 (CCPA 1949) (Diligence requires that applicants must be specific as to dates and facts.)”  
The period during which diligence is required must be accounted for by either affirmative acts or acceptable excuses. *Rebstock v. Flourat*, 191 USPQ 342, 345 (Bd. Pat. Inter. 1975); *Rieser v. Williams*, 225 F.2d 419, 423, 118 USPQ 96, 100 (CCPA 1958) (Being last to reduce to practice, party cannot prevail unless he has shown that he was first to conceive and that he exercised reasonable diligence during the critical period from just prior to opponent's entry into the field); *Griffith v. Kanamaru*, 816 F.2d 624, 2 USPQ2d 1361 (Fed. Cir. 1987) (Court generally reviewed cases on excuses for inactivity including vacation extended by ill health and daily job demands, and held lack of university funding and personnel are not acceptable excuses.); *Litchfield v. Eigen*, 535 F.2d 72, 190 USPQ 113 (CCPA 1976) (budgetary limits and availability of animals for testing not sufficiently described); *Morway v. Bondi*, 203 F.2d 741, 749, 97 USPQ 318, 323 (CCPA 1953) (voluntarily laying aside inventive concept in pursuit of other projects is generally not an acceptable excuse although there may be circumstances creating exceptions); *Anderson v. Crowther*, 152 USPQ 504, 512 (Bd. Pat. Inter. 1965) (preparation of routine periodic reports covering all accomplishments of the laboratory insufficient to show diligence); *Wu v. Jucker*, 167 USPQ 467, 472-73 (Bd. Pat. Inter. 1968) (applicant improperly allowed test data sheets to accumulate to a sufficient amount to justify interfering with equipment then in use on another project); *Tucker v. Natta*, 171 USPQ 494,498 (Bd. Pat. Inter. 1971) (“[a]ctivity directed toward the reduction to practice of a genus does not establish, *prima facie*, diligence toward the reduction to practice of a species embraced by said genus”); *Justus v. Appenzeller*, 177 USPQ 332, 340-1 (Bd. Pat. Inter. 1971) (Although it is possible that patentee could have reduced the invention to practice in a shorter time by relying on stock items rather than by designing a particular piece of hardware, patentee exercised reasonable diligence to secure the required hardware to actually reduce the invention to practice. “[I]n deciding the question of diligence it is immaterial that the inventor may not have taken the expeditious course..”).

The Examiner notes that the periods of time from August 14, 2003 to August 26, 2003, August 26, 2003 to January 15, 2004, and January 19, 2004 to February 3, 2004, have not been accounted for by either affirmative acts or acceptable excuses. In order to reasonably account for activity being done during these periods of time there needs to be a showing of attorney-diligence by the attorney and/or engineering-diligence by the inventors during these periods of time. Evidence should also be provided to support such a showing of diligence during these time periods. General statements without supporting evidence, such as the statements provided in sections 4-9 of both supplemental declarations filed August, 2010, are not a showing but a mere pleading. Therefore, based on the foregoing, the supplemental declarations filed on August 4, 2010 under 37 CFR 1.131 are ineffective to overcome the Federwisch and Edwards references. Accordingly, the rejection of claims 1, 3, 6-10, 13-15, 19, 20, 23, 25, 28-31, 33, and 36-42 under 35 U.S.C. 103(a) as being unpatentable over Federwisch in view of Edwards and the rejection of claims 2, 4, 5, 11, 12, 24, 26, 27, 32, 34, and 35 under 35 U.S.C. 103(a) as being unpatentable over Federwisch in view of Edwards as applied to claims 1, 3, 9, 10, 23, 25, 31, and 33 above, and further in view of Haskin, are maintained by the Examiner.

### **Conclusion**

#### **STATUS OF CLAIMS IN THE APPLICATION**

The following is a summary of the treatment and status of all claims in the application as recommended by MPEP 707.70(i):

**CLAIMS REJECTED IN THE APPLICATION**

Per the instant office action, claims 1-15, 19, 20, and 23-42 have received an action on the merits and are subject of a non-final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arpan P. Savla whose telephone number is (571) 272-1077. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sanjiv Shah can be reached on (571) 272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Arpan P. Savla/  
Examiner, Art Unit 2185  
October 15, 2010

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